Part One *Recertification*

FOREWORD

Patients with diseases of the lungs and heart frequently call for assistance from EMTs because they can not breathe comfortably. This CBT unit emphasizes common disorders that cause complaint, provides some basic information about them, and gives direction to EMT/FRs for the prehospital management of these conditions.

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GOALS

1. **E**arly recognition
2. **M**eaningful intervention
3. **S**afe, rapid transport to the appropriate medical facility

OBJECTIVES

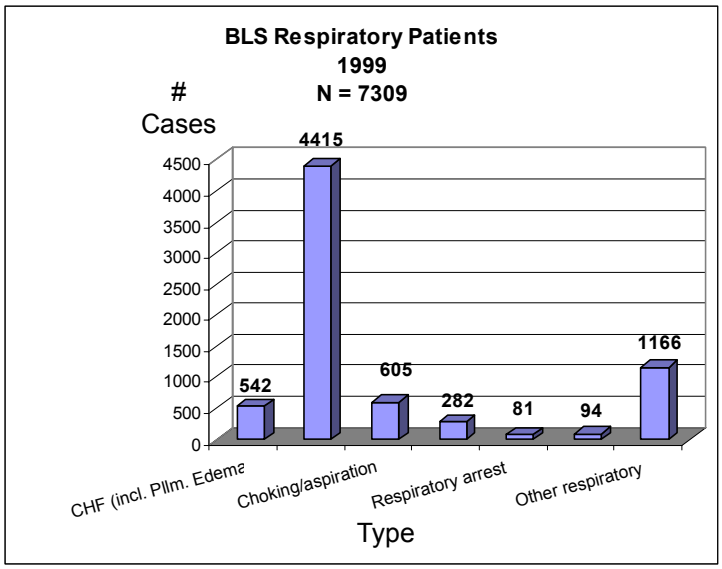
Performance Based

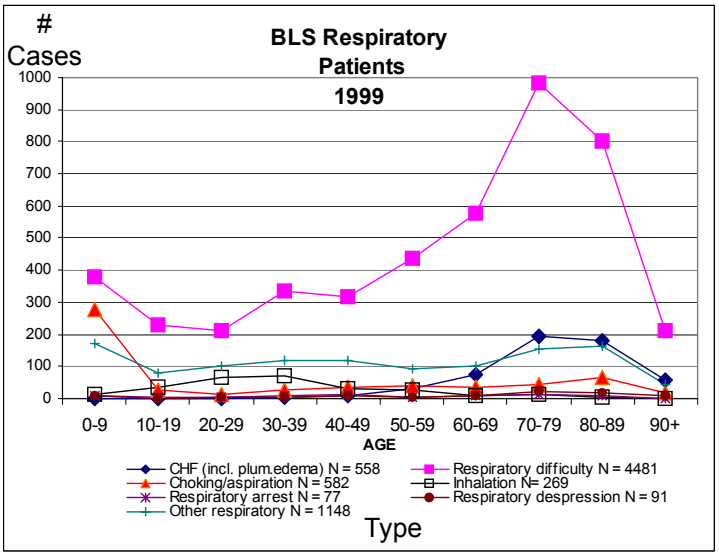
Given a partner, relevant equipment, and a patient with a respiratory emergency, the EMT/FR will demonstrate treatment as specifically identified in the King County Emergency Medical Services BLS Patient Care Guidelines.

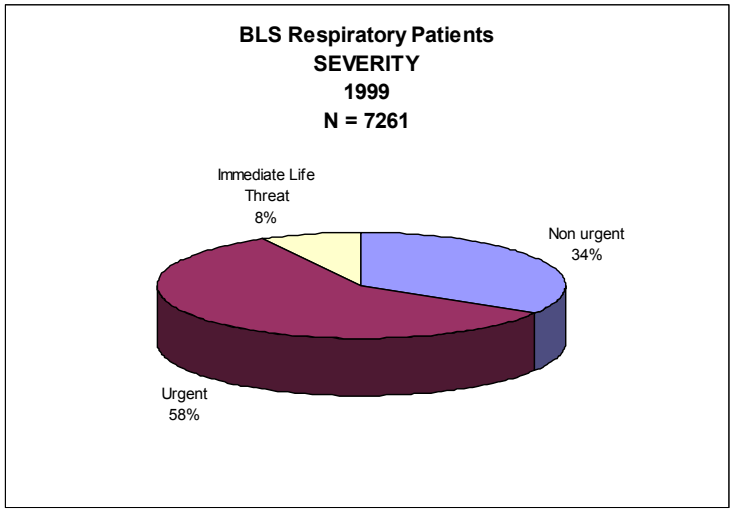
Cognitive Based

After studying the Competency Based Training (CBT) 425 Respiratory Emergencies module, the EMT will verify cognitive learning by successfully passing a ten question written test by achieving a minimum score of 70%.

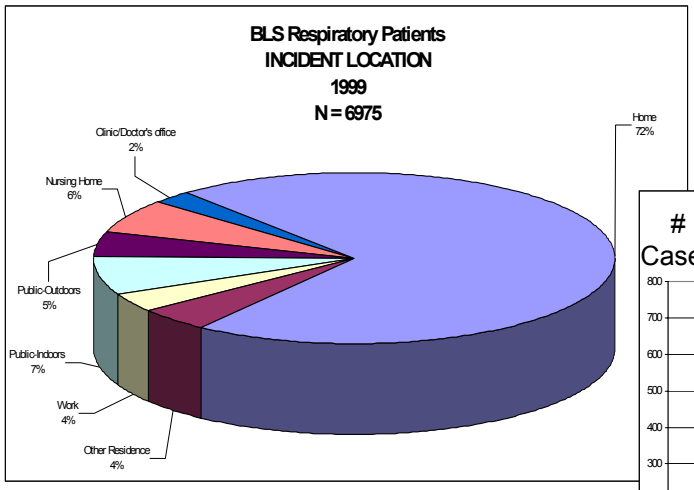
MIRF Facts

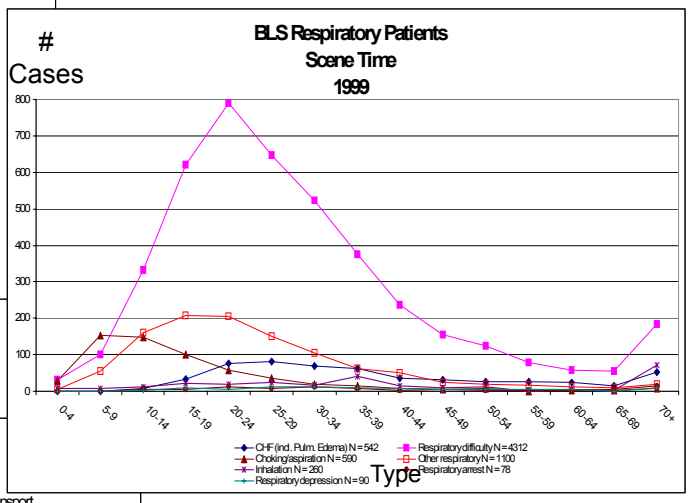

BLS Respiratory Patients
1999
N = 7309
# Cases
4415
542
605
282
81
94
1166
CHF (incl. Plm. Edema
Choking/aspiration
Respiratory arrest
Other respiratory
Type

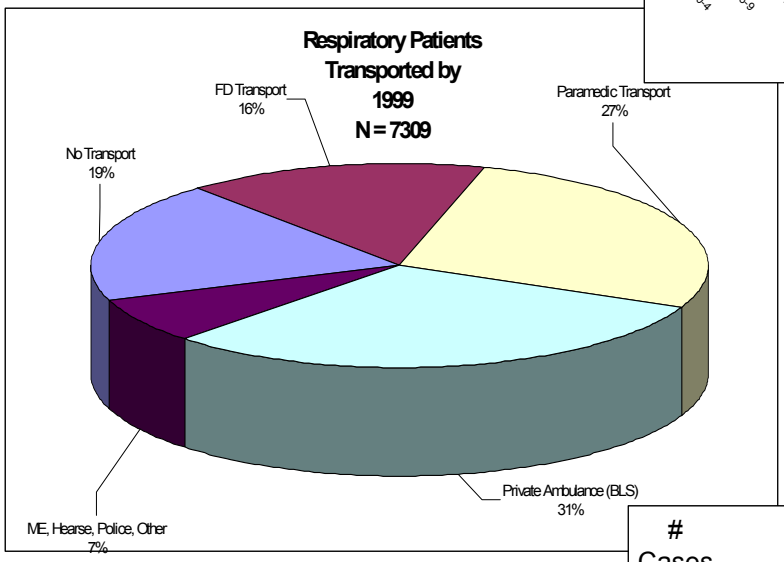

Cases
BLS Respiratory Patients
1999
0-9
10-19
20-29
30-39
40-49
50-59
60-69
70-79
80-89
90+
AGE
CHF (incl. plum.edema) N = 558
Choking/aspiration N = 582
Respiratory arrest N = 77
Other respiratory N = 1148
Respiratory difficulty N = 4481
Inhalation N= 269
Respiratory despression N = 91
Type

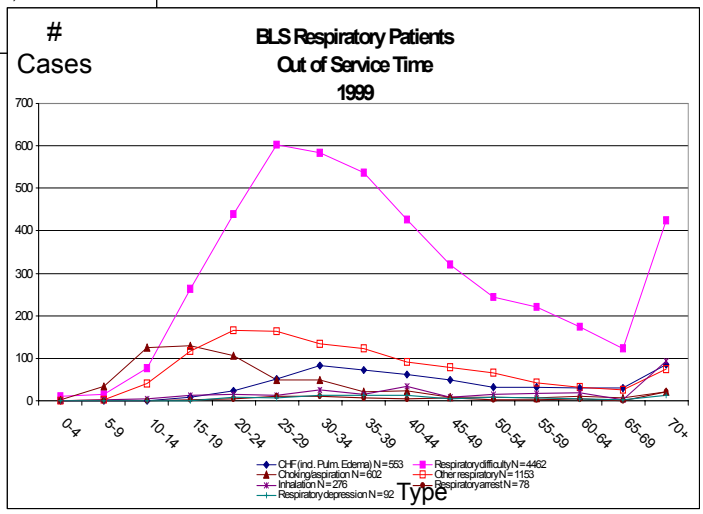

BLS Respiratory Patients
SEVERITY
1999
N = 7261
Immediate Life Threat 8%
Non urgent 34%
Urgent 58%

MIRF Facts


BLS Respiratory Patients
INCIDENT LOCATION
1999
N = 6975
Home 72%
Clinic/Doctor's office 2%
Nursing Home 6%
Public-Outdoors 5%
Public-Indoors 7%
Work 4%
Other Residence 4%


BLS Respiratory Patients
Scene Time
1999
Cases
Type
CHF (incl. Pulm. Edema) N = 542
Choking/aspiration N = 590
Inhalation N = 260
Respiratory depression N = 90
Respiratory difficulty N = 4312
Other respiratory N = 1100
Respiratory arrest N = 78


Respiratory Patients
Transported by
1999
N = 7309
FD Transport 16%
Paramedic Transport 27%
No Transport 19%
Private Ambulance (BLS) 31%
ME, Hearse, Police, Other 7%


BLS Respiratory Patients
Out of Service Time
1999
Cases
Type
CHF (incl. Pulm. Edema) N = 553
Choking/aspiration N = 602
Inhalation N = 276
Respiratory depression N = 92
Respiratory difficulty N = 4462
Other respiratory N = 1153
Respiratory arrest N = 78

Medical Terminology

Allergen	A substance that causes an allergic reaction
Asthma	A disease of the lungs in which muscle spasm in the small air pas sageways and the production of large amounts of mucus results in airway obstruction
Bronchitis	Inflammation of the major lung passageways, from either infectious disease or irritants such as smoke
Carbon dioxide retention	A condition characterized by a chronically high blood level of carbon dioxide
Chronic Obstructive Pulmonary Disease (COPD)	A slow process of dilation and disruption of pulmonary alveoli
Dyspnea	Shortness of breath or difficulty breathing
Embolus	A blood clot or other substance that has formed in a blood vessel or the heart, that breaks off and travels to another blood vessel, where it may cause blockage
Emphysema (COPD)	A disease of the lungs in which there is extreme dilation and eventual destruction of pulmonary alveoli with poor exchange of oxygen and carbon dioxide; it is one form of chronic obstructive pulmonary disease
Epiglottitis	Inflammation of the epiglottis with swelling and enlargement which may cause upper airway obstruction
Hyperventilation	Rapid deep breathing
Hypoxia	A condition in which the body's cells and tissue do not have enough oxygen
Pleura	Thin membrane covering the lung and lining the chest cavity

Pleural effusion	A collection of fluid between the lung and the chest wall that may compress the lung
Pleuritic chest pain	Sharp, stabbing pain in the chest that is worsened by a deep breath; often caused by inflammation or irritation of the pleura
Pneumonia	Inflammation of the lung, which may decrease lung, function & leave permanent damage
Pneumothorax	Accumulation of air in the pleural space
Pulmonary edema	A buildup of fluid in the lungs, usually as a result of congestive heart failure
Rales	Crackling, rattling breath sounds signaling fluid in the air spaces of the lungs
Rhonchi	Coarse breath sounds heard in patients with mucus in the airways
Stridor	A harsh, high-pitched inspiratory sound, such as the sound often heard in acute laryngeal (upper airway) obstruction
Wheeze	A high-pitched, whistling breath sound, characteristically heard on expiration in patients with asthma or COPD

Synopsis

A fundamental challenge of understanding, assessing, and treating respiratory emergencies is recognizing that not all respiratory impairment will be evident as “shortness of breath.” Respiratory impairment can occur in a variety of situations, with many different etiologies. By understanding anatomy and physiology, the astute EMT/FR will be able to find the thread that ties these diverse patients together. More important, the EMT/FR will then learn the best way to treat such patients.

Anatomy

As an EMT/FR, you are a specialist in providing basic life support (BLS). Important skills of BLS are airway protection and oxygen administration. By knowing the anatomical structures of the airway, you will have a better understanding of what may be going wrong with your patient and how to intervene.

STRUCTURES OF THE RESPIRATORY SYSTEM

Nasopharynx Air enters through the nose and is warmed, moistened, and filtered as it passes through the mucous membrane of the nasal passage.

Pharynx The pharynx is also known as the throat; it serves as a passageway for food and air.

Larynx The larynx, or voice box, can be seen externally as the “Adam’s apple.” The Adam’s apple is actually the cricoid cartilage that protects the larynx.

Esophagus This muscular, tube like structure carries food from the pharynx to the stomach, and is located behind the trachea.

Epiglottis The epiglottis is a lid-like structure that overhangs the superior (top) entrance to the larynx. It prevents food and liquids from entering the larynx and the trachea when swallowing.

Trachea The trachea, or “windpipe,” is a tube extending from larynx to the bronchi. Air travels through the trachea, then into the bronchi.

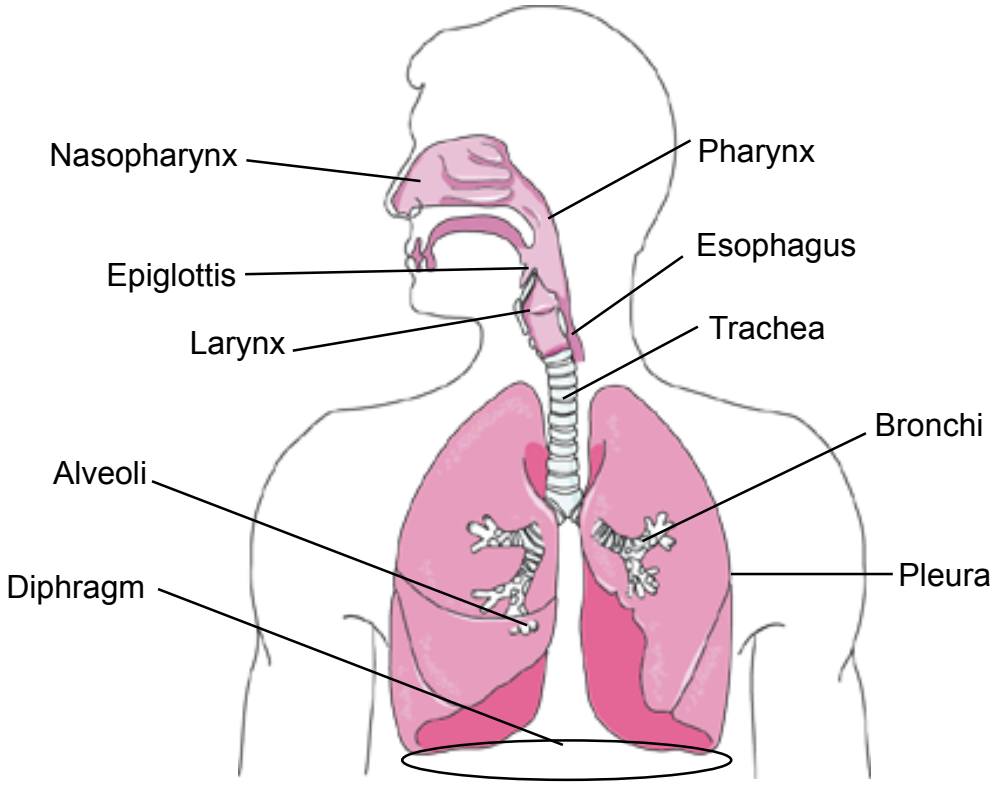
Lungs These spongy, elastic organs contain alveoli, the microscopic air sacs where the oxygen/carbon dioxide exchange occurs.

Bronchi The bronchi are an extension of the trachea. They divide into two branches from the trachea. The primary branches are the right and left mainstem bronchi. The bronchi branch into smaller airways called bronchioles. This whole complex of tubes is much like an upside-down tree with one main branch (trachea) at the top and the tiny branches (bronchioles) at the bottom. The word bronchus is the singular form of the word bronchi.

Alveoli The alveoli are tiny, elastic air sacs at the end of the bronchi. They hang off the bronchioles and resemble a cluster of grapes. It is here that oxygen in the air is exchanged for carbon dioxide in the blood. There are approximately 700 million alveoli in the lungs. Each alveolus is only 1mm (.04in) in diameter.

Pleura The pleura consist of layers of tissue: the visceral pleura cover the lungs, and the parietal pleura line the inside of the thoracic cavity. Between these two layers is a fluid that seals the lungs to the thorax. This sealing phenomenon can be observed when a layer of water is between two pieces of glass. When the thorax expands, the pleura pulls the lungs, causing air to move into the lungs.

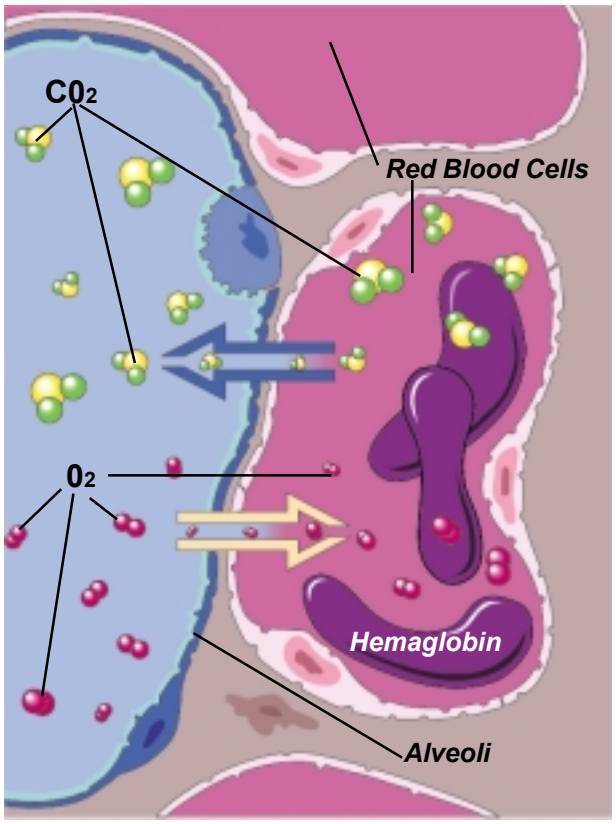
Diaphragm The diaphragm is a large skeletal muscle that is the major force in respiration. It separates the chest cavity from the abdominal cavity.



The Respiratory System

PHYSIOLOGY

The following facts describe some of the physiology functioning of the respiratory system.



1. <u>Normal aerobic metabolism requires oxygen.</u>
Oxygen is essential to survival. However, the air we breathe is actually only 21 percent oxygen. Most of the remainder is nitrogen, an inert gas. The process of respiration is vital. To function normally, every cell requires a steady supply of oxygen. This allows the cell to metabolize aerobically (meaning “with oxygen”).

2. <u>A metabolic byproduct of this metabolism is carbon dioxide</u>.
Carbon dioxide is produced by the cells and carried by the circulatory system to the lungs, where it is expired. If respirations are impaired, carbon dioxide builds up. This carbon dioxide, dissolved in solution, combines with water to produce an acid, carbonic acid.

3. <u>Carbon dioxide, through its interaction with water to produce carbonic acid, is one component of a chemical reaction that regulates the amount of acid in our blood</u>.
Acidity in a solution such as blood is measured by what is called **pH**. The body must maintain a relatively narrow pH range (neither too acidic nor too basic) in order to function properly.

4. <u>The amount of acid in the blood is the primary stimulus for respiration</u>.
Because the respiratory system helps regulate carbon dioxide excretion or retention, it is an important mechanism for regulating pH. A secondary stimulus for respiration is hypoxia, a decrease in oxygen. While less important for regulation of respirations in the average person, in some individuals, this so-called hypoxic drive is the primary stimulus for respiration. This occurs in a small percentage of those with COPD, who expirations are so inefficient that their bodies must become acclimated to higher than normal levels of carbon dioxide. In these individuals, a decrease in oxygen rather than an increase in carbon dioxide provides the primary stimulus for taking a breath.

5. <u>The respiratory system seeks to maintain a constant acid level/pH of the blood</u>.
The respiratory system is a mirror for other changes that can happen in a person's body. If the pH becomes too low (too acidic), the respiratory system will attempt to fix this by causing the person to breath more deeply and rapidly, thus excreting more carbon dioxide.

6. <u>The body seeks to maintain equilibrium, called homeostasis, with a variety of mechanisms</u>.
Besides the **respiratory** system, there are two other mechanisms by which the body maintains a constant pH. One is the **buffer** system, which uses chemicals in the blood to soak up extra acid or make more acid available if necessary, a rapid chemical reaction. Another is the **renal** system, which regulates the amount of acid produced or assimilated, but does so fairly slowly, over several hours to days. The respiratory response to changes in pH is relatively rapid: you may see a person's respiratory rate increase or decrease in response to pH just a few minutes after the change in pH has occurred.

<u>When things go wrong: hypoxia, hypercapnia, and metabolic imbalances</u>

Understanding the normal physiology of the respiratory system helps us appreciate what can go wrong, how we would recognize it, how the body might respond, and how we as EMT/FRs can help. Understanding physiology, we can appreciate the interplay between oxygen and carbon dioxide, and their effect on pH of the blood — all so vital to the normal functioning of the entire body. Here's what can go wrong:

<u>Hypoxia</u> (hypo=low, oxia=oxygen) is a decreased supply of oxygen. Hypoxia can be caused by the any of the following:

• Decreased oxygen in the air (smoke inhalation, breathing of poison gases)

• Decreased ability of the respiratory system to carry oxygenated air to the alveoli (trauma to the chest, blood in the airway, fluid in the lungs [congestive heart failure])

• Decreased ability of the blood to carry oxygen (anemia)

• Decreased functioning of the lung (chronic lung problems, lung infection)

• Decreased perfusion to the tissues (shock)

• Decreased respiratory drive (central nervous system impairment due to head injury, overdose, and so on)

Hypercapnia (hyper=high, capnia=carbon dioxide) is an excess of carbon dioxide. This results in acidosis as the carbon dioxide causes a chemical reaction producing acid. Hypercapnia can occur in a number of ways:

• Hypoventilation: a person has a depressed respiratory drive, for example due to an overdose of sedative drugs
• Retention of carbon dioxide due to the inability of the body to exhale fully (e.g. asthma)
• Respiratory acidosis is excess carbon dioxide in the blood due to severe dyspnea causing a low PH

Metabolic imbalances affect the chemistry of the body, causing imbalances in pH and other measures of body chemistry. While not a primary respiratory problem, the respiratory system often tries to compensate in order to maintain equilibrium. Metabolic problems include the following:

• Ketoacidosis: inefficient metabolism of sugars in a diabetic causes the body to turn to other fuel sources, namely fat and muscle, for energy. Byproducts of this inefficient metabolism are acids called *ketoacids*. The presence of ketoacids and related compounds in the blood will give the person an acid pH. The body attempts to compensate by "blowing off" carbon dioxide with deep, rapid breaths, thus reducing the acidosis. A metabolic acidosis causes a low PH with intact pulmonary function

• Aspirin overdose: Aspirin itself is an acid (the complete name is *acetylsalicylic acid*). When taken in large quantities, a person with an aspirin overdose may become acidotic. Again, the body compensates by increasing the respiratory rate

• Fever/sepsis: Fever increases the metabolic rate, causing the production of more carbon dioxide — a normal metabolic product. When tissue perfusion fails excess metabolic acids accumulate causing a metabolic acidosis with a low PH. The body in turn will respond by increasing the respiratory rate

• Hyperventilation: A person who is hyperventilating for psychological reasons is breathing deeply and rapidly. This is a very efficient way of ridding the body of carbon dioxide: so efficient that this decrease in the normal amount of acid may alter the body's equilibrium and cause what is known as "alkalosis" (just the opposite of acidosis, meaning very "basic"). Symptoms of respiratory alkalosis may include faintness and tingling in the extremities.

Clinical Syndromes

1. Asthma
Etiology Slow, progressive worsening of airflow obstruction over the course of several days or weeks typically precedes status asthmaticus. Three factors combine to cause it: *(1) chronic airway inflammation* resulting in edema; *(2) airway hyper-responsiveness*, which makes the airways more "twitchy" and likely to spasm after exposure to triggers; and *(3) limited airflow* as a result of edema, acute bronchoconstriction, and mucous plugging. If not treated, these factors ultimately lead to airway obstruction
Chief Complaint Can't breath, or speak in full sentences
Medical History May have previously been diagnosed and treated for similar complaint or exposure to allergies
Medications Metered -dose inhaler (MDI) **Treatment Considerations** Calm patient down, airway management, and appropriate oxygen therapy. Assist patient with nebulizer (MDI)
2. Infections
Etiology Upper airway (croup), Lower airway (bronchitis, primarily viral) Lungs (pneumonia, infection of lung tissue from viral or bacterial causes)
Chief Complaint Shortness of breath, weakness, malaise, fever, cough, increased sputum production, pleuritic chest pain, tachycardia, dehydration.
Medical History Recent illness. Can occur at any age but is more common in the elderly
Medications Antibiotics if previously diagnosed
Treatment Considerations Oxygen dependent on severity

3. Pneumonia

Etiology
Inflammation of the lungs caused by an infection that damages and destroys lung tissue. Caused by many different organisms and can
range from a mild to life- threatening illness

Chief Complaint
Chest pain- sharp or stabbing, increased by deep breathing, increased by coughing. Headache, loss of appetite, nausea and vomiting, general discomfort, uneasiness, or ill feeling (malaise)

Medical History
Cough with mucus-like, greenish sputum, chills with shaking, fever, and easy fatigue. Rales, shortness of breath, sweating, skin clammy, nasal flaring, coughing up blood, breathing rapid, anxiety, stress, and tension, abdominal pain

Medications
Antibiotics if previously diagnosed

Treatment Considerations
Oxygen dependent on severity

4. Inhalation Injuries

Etiology
Inhalation of chemicals, smoke, etc…

Chief Complaint
Shortness of breath, coughing, hoarseness, chest pain due to bronchial irritation, nausea

Medical History
Exposure to smoke or other agents. Past medical history- Individuals with decreased respiratory reserve (history of COPD, etc.) are likely to experience an exacerbation of their disease

Medications
N/A

Treatment Considerations
High flow oxygen if in distress

5. Obstructed Airway
Etiology Aspiration of a foreign body
Chief Complaint Can't talk, choking, coughing, cyanotic, stridor and short of breath
Medical History Eating, putting objects in mouth. People with past history of stroke may have damaged swallowing/gag reflexes, making them more prone to choking. Consumption of alcohol and some drugs also suppresses the gag reflex
Common Medications N/A
Treatment Considerations Heimlich

6. Pneumothorax
Etiology Rupture of lung tissue through pleura allowing atmospheric air into the pleural space. This causes collapse of part or the entire lung. This can occur spontaneously (COPD is a risk factor) or as a result of trauma
Chief Complaint Sharp chest pain, shortness of breath. May feel subcutaneous air. Diminished breath sounds
Medical History Forceful coughing in a simple pneumothorax. Chest injury. Prior history. COPD is a risk factor
Common Medications N/A
Treatment Considerations High flow oxygen. Judicious use of positive pressure ventilation; this can turn a spontaneous pneumothorax into a life-threatening tension pneumothorax

7. Psychogenic Hyperventilation

Etiology
Stressful situations cause the patient to feel anxious and short of breath; patient begins to breathe rapidly and deeply. Psychogenic hyperventilation is self-perpetuating; hyperventilation decreases cerebral blood flow causing cerebral hypoxia and acidosis.

Chief Complaint
Feeling of shortness of breath despite the fact that there is no objective respiratory dysfunction noted. Numbness around mouth, tingling in extremities Spasms of fingers, hands. Clear lung sounds, good color, and normal oxygen saturation

Medical History
Emotional event, stress, possible history of prior hyperventilation, anxiety attacks

Common Medications
Anti-anxiety meds: Valium, Xanax, Lorazepam (Ativan)

Treatment Considerations
Calm and reassure the patient. Coach patient to breath slower and shallower. If unable to slow the breathing with coaching, start low flow oxygen. Rebreathing devices such as paper bags should not be used in the field by EMT/FRs.

8. Pulmonary Embolus

Etiology
A venous thrombosis (clot) breaks loose, usually from the lower extremities. May travel through the bloodstream to the lungs, where it gets lodged. Can cause death immediately. Otherwise, it causes sharp chest pain and shortness of breath

Chief Complaint
Sharp chest pain, shortness of breath, tachycardia. In severe cases, sudden hypotension, cyanosis, death

Medical History
Immobility of lower extremities (cast or long airplane trips) or prolonged bed rest, or recent surgery. Thrombophlebitis is inflammation or clotting in a vein, often of the leg.

Common Medications Warfarin (Coumadin)

Treatment Considerations
High-flow oxygen. Move gently to avoid dislodging possible remaining thrombi

Etiology
An acute allergic reaction affecting several body systems. Two primary components: (1) *Severe respiratory distress* - evidenced by shortness of breath, dyspnea, stridor, wheezing, cyanosis, and a decreased level of consciousness (2) *Hypotension* - caused by dilatation and leaking of the blood vessels compounded by hypoxia. Allergic reactions can be localized, such as a raised area on the skin from a sting or bite, or they can become systemic and affect the respiratory and circulatory systems

Chief Complaint
Anxiety, shortness of breath, labored breathing, and itching

Medical History
Previous history of anaphylaxis or known agent

Common Medications
Epi-auto injector, Benadryl

Treatment Considerations
Manage airway and breathing; administer Epi-pen auto injector (see KCEMS BLS Pt. care guidelines), oxygen therapy.

Student Notes	***Instructor Ideas***

10. Obstructive Pulmonary Disease (COPD) A slow process of dilation and disruption of the airways and alveoli, caused by chronic bronchial obstruction, includes several related irreversible conditions that limit the ability to exhale. The conditions in this category are *emphysema* and *chronic bronchitis*.

Etiology

Emphysema: The very small airways that join the alveoli are damaged, and the walls lose elasticity. Chronic irritation of small airways causes inflammation and swelling, reducing the lumen (diameter) of these air passages. Irritation causes bronchospasm (small airway muscle spasm), further decreasing the lumen. On inspiration, the expansion of the lungs holds airways open. On exhalation, the lungs relax and the airways narrow, trapping air. Air trapping over time can cause permanent changes to lung tissue.

Chronic bronchitis: Characterized by structural changes in airways of the lung and enlargement of the mucous glands, which causes coughing and production of sputum. Chronic bronchitis also causes shortness of breath and is often accompanied by infection, mucus production, and coughing

Chief Complaint:

Shortness of breath, fever, increased sputum production, which may be discolored

Medical History:

Upper respiratory infection. Chronic bronchitis, emphysema, long history of smoking or working in certain hazardous environments (coal smoke, asbestos)

Common Medications:

Prednisone, Albuterol (Proventil, Ventolin), Theophylline (Theo-Dur), Atrovent, Asthmacort.

Medic response:

Dependent on severity

Treatment:

High flow oxygen for patients in distress. If the patient becomes lethargic after oxygen, decrease liter flow slightly.

Assist patient with inhaler as appropriate.

11. Congestive Heart Failure (CHF)

Etiology
Damage to the left ventricle by heart attack, hypertension and valve disease impairs its ability to contract and empty during systole. Increased pressure in the left ventricle is transmitted to the lung capillaries and fluid is forced into the alveoli. Some patients have poorly relaxing left ventricles (diastolic dysfunction), which causes the same changes.

Chief Complaint
Relatively acute onset (minutes to hours). Will present sitting upright, short of breath, diaphoretic, pale or cyanotic in color. Breath sounds: basilar (base) to full field rales, or full field wheezing (may be difficult to differentiate CHF and COPD by breath sounds).

Medical History
May report increased shortness of breath when supine, perhaps non-compliance with meds. Recent salt ingestion. Long-term hypertension, congestive heart failure ("water on the lungs" in lay terms), enlarged heart; MI. May have atrial fibrillation (irregular heart rate).

Common Medications
Ace inhibitors, Furosemide (Lasix), HCTZ (hydrochlorothiazide), numerous drugs for hypertension, Lanoxin (Digoxin). Medications may help differentiate this patient's symptoms from someone with COPD.

Treatment Considerations
Seat patient upright and administer high flow oxygen; consider positive pressure ventilation with BVM. If patient is producing copious amounts of frothy pink sputum, it is more effective to use positive pressure to force the secretions back into the lungs than it is to suction aggressively.

CHF is a "restrictive" lung disease, meaning that the patient has a hard time getting air IN (as opposed to the COPD Pt. who has trouble getting air OUT). Positive pressure ventilation can relieve symptoms dramatically when done correctly.

Subjective

History

A SYSTEMATIC APPROACH TO PATIENT CARE

Symptoms

Onset, what and when did it happen?
Provoke, Mechanism, what caused you to call?
Quality, describe?
Radiate,
Severity, rate the pain from one to ten?
Time, how long?

- Difficulty breathing
- Shortness of breath, talks in two to three word sentences
- Agitation,
- Confusion
- Anxiety
- Nausea
- Exhaustion

Allergies
Medications
Past History
Last Oral Intake
Events Leading Up To Incident

Student Notes	***Instructor Ideas***

Objective	Physical Exam

There are times when a complete physical exam will uncover a problem that would not otherwise have been discovered. However, in the interests of time and efficiency, it is best to base one's exam on the patient's chief complaint and presentation.

- Baseline vital signs (LOC, HR, Respirations, BP and skin color/temperature)
- Exam of head, neck, chest
- Lung sounds (anterior and posterior)
- Respiratory rate, depth, rhythm and effort
- Skin - hive or rashes
- Position - upright, leaning forward
- Use of accessory muscles, chest retractions
- *Secondary* set of vitals signs and compare to baseline

Student Notes	***Instructor Ideas***

Assessment

Impression

ALS Indicators (Sick)

- Decreased level of consciousness
- Extreme anxiety and agitation
- Tripod position
- Ashen color, cyanosis
- Failed to respond to usual treatments
- Use of Epi-pen auto injector (see BLS Pt Care Guidelines for Anaphylaxis)
- Abnormally slow (less than 8/min) or rapid (great then 30/min) respirations
- Labored respirations regardless of rate when found with other indicators
- Audible wheezing, rales when found with other indicators

BLS Indicators (Not Sick)

- **No ALS indicators**

Student Notes	***Instructor Ideas***

Plan	Treatment

- **Request medics if needed (als indicators)**
- Reassure patient and try to keep them clam
- Provide oxygen/ventilate if needed
- Assist patient with medications e.g. Inhaler. Epi pen if indicated
- Position and prepare patient for transport
- Anticipate vomiting/have suction ready
- Deliver short report to medic unit (if dispatched)
- Make transport/destination decision and transport
- Monitor vital signs every 5 to 10 minutes depending on patient's condition

ADMINSTRATION OF EPINEPHRINE

In King County, consistent with RCW 18.73.250 all EMT will have preloaded epinephrine auto injectors (EpiPen auto injector).

The EMT may administer epinephrine to:

1. Patients greater than 18 with prescription
2. Patients < 18 with patient, parental, or guardian providing writ ten or oral consent/ or request
3. Patient > 18 and no previous prescription or < 18 and no pa tient, parent or guardian consent or request. Then call for permission from on-line Medical Control
4. **Specific Dosages:**
   Adult (30 kg or 66 lbs and heavier) EpiPen = **.3 mg (Yellow)**
   Child (Under 30 kg or 66 lbs) EpiPen = **.15 mg (White)**

1 Expiration date checked
2 Assure not cloudy or crystallized.
3 Remove safety cap and locate the injection site on the lateral thigh.
4 Remove clothing and wipe the patient's thigh with alcohol swab.
5 Place the ***black tip*** of the auto-injector against the lateral part of the patient's thigh.
6 Push hard against the thigh until the injector activates.
7 Hold in place for 10 seconds.
8 Remove the injector and massage injection site for 10 seconds
9 Dispose of injector in a proper biohazard (sharps) container
10 Reassure patient
11 Monitor vital signs

Plan

Treatment

Plan continued

POST EPI PEN AUTO INJECTOR INSTRUCTIONS

- Note The Time Given As Well As The Type Of Device Used
- Document The Response On The Mirf And Qa Form
- Continue To Monitor Vitals, At Least Every 5 Minutes
- Continue To Provide Oxygen. Ventilate The Patient If Necessary
- Update The Incoming Paramedic Unit Of The Patient's Condition

Special Note: Always request Medics because, in rare cases, a single dose of epinephrine may not be enough. The patient may continue to have hypotension, along with a decreasing level of consciousness, and/or increasing breathing difficulty. If the patient's condition does not improve, consult on-line medical control about injection of a second dose.

Be alert to epinephrine's effects, which, in addition to improved blood pressure and respirations, may include an increased heart rate, palpitations, and anxiety. Such symptoms usually resolve within 20 minutes. Patients over age 35 may experience cardiac symptoms. Patients taking certain medications (cardiovascular medications called beta-blockers, for example) may be relatively resistant to the effects of epinephrine.

See Appendix for Transport & Destination Decisions

APPENDIX A

TRANSPORT DECISIONS

1. Leave at scene

Minor illness with little or no potential for patient to worsen

BLS Indicators

EMT feels confident that patient is responsible for self-care, or that another responsible party is present

EMT urges patient to call back if further concerns or problems

EMT reminds patient to follow up with private MD if appropriate

Patient refusal signed ONLY if a) EMT believes patient SHOULD go to medical facility and b) patient refuses treatment/transportation

Patient who has treated his chronic condition satisfactorily and desires to be left at home

2. Patient's Own Vehicle (POV)

BLS Indicators, with further evaluation or treatment needed

Responsible transportation available and further BLS care not required

3. BLS Aid Car/Private Ambulance

BLS Indicators

BLS assessment, oxygen or other treatment needed en route

No other responsible transport available

Patient requires stretcher for transport

4. ALS

ALS Indicators

Continued ALS assessment/treatment needed during transport

DESTINATION DECISIONS

1. Self-care

Minor illness with little or no potential for patient to worsen
BLS Indicators
EMT feels confident that patient is responsible for self-care, or that another responsible party is present
EMT urges patient to call back if further concerns or problems arise
EMT reminds patient to follow up with private MD if appropriate
Patient refusal signed ONLY if a) EMT believes patient SHOULD go to medical

facility and b) patient refuses treatment/transportation
Patient who has treated his chronic condition satisfactorily and desires to be left at home

2. Clinic or Doctor's office

Minor illness with little or no immediate potential for patient's condition to worsen
BLS Indicators with need for further evaluation and treatment
Facility is available and capable of assessing & treating patient
Facility agrees to see patient
Patient has transportation to and from the facility considered ...

3. Hospital Emergency Room

ALS or BLS indicators with need for further medical evaluation and treatment
No other facility appropriate or available to see patient

Learning References and Resources

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